NSLS II
Conventional Facilities Advisory Committee
November 2009

The following is a report of the review conducted by the Conventional Facilities Advisory Committee for the NSLS II Project. It is organized according to the charge provided to the committee by the NSLS II Project.

Members of the committee included:
Jack Stellern, Chairman (ORNL)
Joe Harkins (LBNL)
Marvin Kirshenbaum (ANL)
Karen Hellman (ANL)
Richard Hislop (ES&H Consultant)
Jim Sanford (BNL Advisor)

The committee was impressed with the progress that has been made by Conventional Facilities since the last CFAC meeting. The extent of progress in the construction has however been tempered by the recent serious accident to a construction worker.

1. Are the Conventional Facilities Division's plans and performance consistent with achieving the cost, schedule, technical and safety objectives for the Project?

It is very encouraging that the project managers advanced the LOB design over the past year. This effort included informative interactions with the future experimental users that lead to a larger an improved layout. When the stimulus money came in FY '09 the project truly had "shovel ready" LOB designs, which effectively utilized the increased $150M in funding. The early delivery of this valuable space has helped the installation activities for accelerator and beam line components by providing potential staging area and provided potential cost savings.

The conventional facilities schedule improvement due to the ARRA funds is significant and the overall project now has 16 months of float. This is excellent for this point in the project.

The project has done a good job maintaining cost contingency. The contingency is currently greater than 25%. This is right on target for this point in the project.

The scope of the conventional facilities has been maintained and enhanced with the additional LOB's.

2. Are the plans and measures to assure construction worker safety appropriate and effective at minimizing potential for worker injury?

The NSLS-II construction project safety program is comprehensive and well documented. The NSLS II documents in general appropriately address team safety "Roles and Responsibilities." Torcon's documented safety program is also comprehensive. These observations have been affirmed by several independent reviews over the past year. NSLS II safety staff appears to be appropriate for the current evolution of the project. Presentations to the CFAC reported that the safety processes outlined in the NSLS-II documents are taking place.

However, the project is not achieving "Best in Class" safety performance it originally set as a performance objective.

The CFAC has concluded that project safety performance shortcomings are the result of the following elements:

Project Staffing

Torcon Site Safety Manager - This Key Project Person has not effectively implemented a robust construction safety program as outlined in the contractual documents. It was apparent that administrative responsibilities detract from field activities and effective program implementation. Torcon management has not provided adequate resources and authority to allow effective implementation of a "best in class" ESH program and allow the ESH Manager to assure the construction safety program is being executed appropriately.

Recommendation: Require Torcon to restructure their EHS program to assure proper authority and resources are available to implement a "best in class" program.

NSLS-II Construction Safety Personnel – These are competent individuals with the project interests clearly their primary priority. However, they appear to be attempting to manage the construction site safety program for Torcon. The CFAC did not have the time to evaluate this observation to any great depth, but a contractor will typically step back and let the client take on as much work as they wish. Since the September 30th incident, a "Daily Morning Safety Coordination Meeting" has been implements which is by all reports effective at documenting contractor safety status and prompting contractor action to resolve any issues identified.

Recommendation: NSLS-II must focus on assuring that Torcon is effectively executing the safety program elements in the field. This focus must be on the process. The result will be proper Means and Methods and proper Field Conditions.

Phase Hazard Analysis

The requirement that a Phase Hazard Analysis be developed for each work activity is being met. PHAs are an excellent process to define and discuss how work is to be conducted and to identify and communicate requisite safety controls. Those PHAs that were reviewed were detailed and complete. Following the September occurrence renewed emphasis was placed on this requirement which may account for their current condition.

Recommendation: NSLS-II should continue to closely scrutinize the development, content and the effectiveness with which the PHAs are communicated and implemented in the field. The project should consider scheduling a Safety Observation Walkabout each day conducted by two person teams, consisting of an NSLS II person and Torcon person, with the direction to focus on the implementation of PHAs. The team should be asked to review the PHA for a field activity and verify that the document has been properly executed and is being followed. Field personnel need to get the message that the project is serious about the PHA process and that they are expected to follow the process.

Incentive Award – The objective of an Incentive Award is to incentivize the subcontractor and its personnel to be conscious of safety. At this point Torcon has undoubtedly discounted the current incentive fee, and consider it unachievable. Therefore, the incentive program is currently offering little value to the project. Given Torcon's current injury experience they can only hope for a payment in 2 years. However, they have probably concluded that they will never receive any of the money, so it is not being discussed with the field hands.

Recommendation: Re-Negotiate the Incentive Award. If there are 2M hours left on the project and $ 2M in the budget offer Torcon the opportunity to earn $1 an hour/ and pay them every 2 months that every person on the project payroll came to work. Restart the 2 month award clock on award or after each accident.

Then require that a significant portion of the award be given to the subcontractors and workers either in the form of monetary awards or a BBQ. Some significant portion of the balance should be awarded to the Torcon Key Personnel.

3. Does the plan for procurement and management of the LOB construction provide the best available approach to achieving this scope element?

Adding two weeks to reconcile design comments on the LOB is good practice as this will likely minimize the chance of a significant addendum.
The plan to approve LOB design (including acceptance by Experimental Systems) prior to issuing for bid is good practice.
The committee agrees with the plan to perform subgrade work for all 5 LOBs under the Ring Building contract and the plan of a best value award for the LOB procurement and agree with the planned order of bid alternates (i.e. to shell remaining 2 LOBs prior to fitting out more than the two in the baseline scope).
The coordination of LOB logistics with Torcon is a good practice and should minimize conflicts if a second contractor is awarded this work.
The CF team has budgeted 1.5FTE to manage the increase in CM effort and plans to provide this staff through the Liro/Gilbane contract. This plan appears to be adequate.

4. Does the Conventional Facilities Division's preliminary plan to support transition to operations address the proper issues and scope of supporting facility operations and future growth

The CF division does not currently have a written preliminary plan to support the NSLS II transition to operations.

Recommendation: It is our recommendation that a formal transition to operations plan be created. Identify and delineate the type of documents to be assembled for start up and transition activities. Clearly define roles in this transition process including both the CF staff and BNL maintenance staff.

As the light source buildings are constructed as a shell with the accelerator and user build out occurring over an extended period time the transition of operations will be a long process that will occur over a period of years.

Transition to operations for this project will be a stepped process, initially transitioning pentants to accommodate installation of equipment. The acceptance of each pentant is well defined and the schedule is understood. The BNL BORE process will be utilized for occupancy permits. A plan is being developed that reflects transition to final occupancy once equipment installation is complete. This plan should also include the aforementioned long term transition to operations required for this facility.

LOB scope is being determined by economic opportunity. The project will perform as much construction as feasible.

Recommendation: The LOB portion of the project should also develop a transition to operations plan to including initial programming of occupants and future build out. Prior to preparing a written plan the project should outline the objectives and responsibilities for conventional facilities including both support of both accelerator and user needs. This outline should recognize that the transition process is an extended one and will occur over a long period of time. In the preparation of this outline the NSLS II should take advantage of the experience at other DOE facilities and that of the new CFN facility at BNL. This outline and the plan itself should be prepared with the assistance of the accelerator systems and experimental facilities groups.

Other Recommendations:

- Recommend that the letter to the contractor accepting the schedule for the CCWF Building state that the float created by their accelerated schedule is not owned by either the contractor or BNL.

- Confirm impacts of delaying CW Piping work to next spring with both the CW Piping contractor and the Ring Building contractor, as soon as possible, as the CW Piping contractor is likely currently staffing up for this work.

- The building for the nanoprobe beamline should be moved from the Experimental Facilities to Conventional Facilities. Project currently plans to move the nanoprobe beamline building to CF in the next two months. Subgrade work is identified in a current Torcon change request.

- The number of rain days accrued should be regularly confirmed with Torcon and any contract extension should be mutually accepted. At this point is the days should be identified on a monthly basis and any change resolved after the 09/10 winter.

- The BNL operations staff should be involved in all functional testing of equipment during commissioning. Early involvement of the operations staff is important for a successful transition to building operations. Need to have operations personnel identified by the turn over of the first portion of the Ring Building.

- The use of HDR for estimating cost impacts of Torcon claims may be perceived as non-impartial. Obtaining estimates from Liro/Gilbane may be a better choice. Project plans to utilize Liro/Gilbane for future changes that can't be handled with project staff.

- A comprehensive document describing methods and materials for utility hook up for accelerator and experimental systems including power, water, a/c, exhaust, fire protection, etc. This should include diagram, sketches, drawings and a construction specification describing mechanical, electrical, temperature control, and fire protection systems.

- In addition to the requirements for O&M manuals and as-built drawings the living documents for the project should include all approved equipment shop drawing.

- The equipment submittals should be maintained as part of the O&M manuals. These documents are critical because they contain critical performance information not included in O&M documents.

- The project should identify that the NSLS II CF group will be an official member of the future beam line design review committee to insure that utility connections and hook up of beam line hutches and enclosures are constructed in a manner compatible with the facility design.

- Little information was provided at this meeting about the development of the master plan for the overall site. In order to explore the options for future additions and enhancements to the core facility, the master plan should be updated. This plan can serve as an informative document for the entire laboratory as they update the overall vision for the growth of Brookhaven National Laboratory.

- The installation plan for the accelerator components was described in a series of sequenced diagrams. The plan requires that Beneficial Occupancy will be achieved for the particular sector with temporary barriers that isolate the area from sectors that are still under construction. To provide access for the equipment the contractor has agreed to provide a temporary entrance in the adjacent section that is still under their control. From this location the accelerator component are sequenced into the eventual experimental area for movement to the mezzanine area or accelerator tunnel. This is likely to happen while the original contractor is still responsible for access to the buildings. This will require detailed coordination particularly with respect to safety issues. The managers of the accelerator systems may easily get preoccupied with their systems and overlook the ongoing operations that are underway in the access space through which they must move. An appropriate management and safety plan is recommended to be generated for these operations.